



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,427	12/27/2001	Olivier Theytaz	19414-06075	9279
758	7590	11/15/2005	EXAMINER SHAPIRO, LEONID	
FENWICK & WEST LLP SILICON VALLEY CENTER 801 CALIFORNIA STREET MOUNTAIN VIEW, CA 94041			ART UNIT 2677	PAPER NUMBER

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/033,427	Applicant(s) THEYTAZ ET AL.	
	Examiner Leonid Shapiro	Art Unit 2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17,25-43,45,47,48,51-53,57 and 58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17,25-43,45,47,48,51-53,57 and 58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/16/05, 7/11/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2, 4-7, 9-15, 25-37, 40-43, 45-48, 51 and 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adan et al. (US Patent NO. 6,531,692; hereinafter referred to as Adan) in view of Bohn et al. (US Patent NO. 6,538,243; hereinafter referred to as Bohn).

As to independent claim 1, Adan (figure 6) teaches a system for illuminating a target surface (optical mouse 42) that includes a light source (LED 104), positioned at angle relative to a circuit board (158), the light source emitting light through an opening (206), and an optical coupler (107) having an entrance surface (inlet end 142) and an exit surface (outlet end 144), wherein the entrance surface positioned to gather the light from the light source and the exit surface directing the light onto the target surface (116) col. 11, lines 11-30 and col. 12, lines 16-34). Adan shows that the entrance surface and the exit surface are positioned at a second angle relative to each other (for that, Adan shows that the inlet surface is generally convex, while the outlet surface is concave, which makes a second angle between them) (col. 11, lines 17-30), the second angle dimensioned to fold a light beam from a first direction associated with the angle of the light source relative to the circuit board to a second direction associated with an

Art Unit: 2673

impinging angle for illuminating the target surface (this is apparent from figure 5, wherein the light from the light source 104 has a certain direction (i.e., angle associated with the angle of the light source, and the output light from the outlet surface 144 has a direction associated with the angle of the outlet surface) (col. 11 , lines 11-31).

Adan does not expressly teach that the optical coupler is a lens. However, according to Microsoft Bookshelf basics dictionary, a lens is "A ground or molded piece of glass, plastic, or other transparent material with opposite surfaces either or both of which are curved, by means of which light rays are refracted so that they converge or diverge to form an image".

Therefore, since the optical coupler (107) taught by Adan has two opposite surface for converge or diverge the light, it would be qualified as a lens that direct the light similar to the lens claimed in claim 1 , and would be obvious to a person of ordinary skill in the art at the time the invention was made to realize that such pad (107) is or can be a lens since it performs the same function of a lens, to appropriately directs the light to the target surface.

Adan does not disclose the first direction (angle) is different from the second direction (angle).

Bohn teaches the first direction (angle) is different from the second direction (angle) (See Fig.13, items 826, 826', Col. 12, Lines 18-41).

It would be obvious to a person of ordinary skill in the art at the time the invention was made to incorporate teaching of Bohn into Adan system in order to collect

Art Unit: 2673

light and increase uniformity of illumination (See Col. 2, Lines 38-41 in the Bohn reference).

As to claims 2 and 4, the shape of the coupler (107) fairly reads on the limitations refraction and diffraction (because the two surfaces 142 and 144 are concave and convex).

As to claim 5, Adan teaches that the light source has an angle of about 20 degrees of the flat surface (same orientation of the circuit board), which is within the range of 10 degrees and 45 degrees (col. 13, lines 5-7).

As to claim 6, as can be seen in figure 6, the light from the LED (104) flows through the opening (206) of the circuit board (158).

As to claim 7, as can be seen in figure 6 and by considering the optical coupler (107) being pad of the light source; the light source protrudes through the circuit board (col. 12, lines 23-29).

As to claim 9, as can be seen in figure 5, the entrance surface of the coupler (107) has a curved surface for gathering the light emitted from the light source (104).

As to claim 10, as can be seen in figures 5-6, Adan shows the coupler (107) having aspherical shape.

As to claim 11, as can be seen in figure 6, Adan shows that the coupler (107) has curved surface for spreading light onto the target surface (106) (col. 11, lines 10-31).

As to claim 12, the shape of the coupler (107) in figures 5-6 is a toroidal shape.

As to claims 13-14, Adan teaches using the device in an optical mouse or trackball (col. 4, lines 14-22).

As to claim 15, as can be seen in figure 6*, Adan teaches that the light source is light emitting diode (104).

As to independent claim 25, the claim is method corresponding to the system of claim 1, and would be analyzed as previously discussed with respect to claim 1.

As to claim 26, Adan teaches that the light source has an angle of about 20 degrees of the flat surface (same orientation of the circuit board), which is within the range of 10 degrees and 45 degrees (col. 13, lines 5-7).

As to independent claim 27, Adan (figure 6) teaches a illumination system for illuminating a surface using an illumination system in a computer pointing device, the method comprising (optical mouse 42) that includes a light means (LED 104), positioned tilted relative to a surface (image detector 1 10), and a gathering means (coupler 107) for gathering the light (col. 12, lines 16-34), and a directing means (opening 206) for directing the light directly onto the surface (106) (col. 11, lines 10-31).

Adan does not disclose the first direction (angle) is different from the second direction (angle).

Bohn teaches the first direction (angle) is different from the second direction (angle) (See Fig.13, items 826, 826', Col. 12, Lines 18-41).

It would be obvious to a person of ordinary skill in the art at the time the invention was made to incorporate teaching of Bohn into Adan system in order to collect light and increase uniformity of illumination (See Col. 2, Lines 38-41 in the Bohn reference).

As to claim 28, as can be seen in figure 6., Adan teaches that the light source is light emitting diode (104).

As to claim 29, Adan teaches that the light source has an angle of about 20 degrees of the flat surface (same orientation of the circuit board), which is within the range of 10 degrees and 45 degrees (col. 13, lines 5-7).

As to claim 30, as can be seen above with respect to claim 27, Adan teaches that the gathering means is a lens (coupler 107, which is discussed above to be equivalent to a lens) positioned to gather the light from the light emitting means (104).

As to claim 31, Adan teaches using the device in an optical mouse or trackball (col. 4, lines 14-22).

As to independent claim 32, Adan (figure 6) teaches a coupler (107) that includes a first curved surface to gather light and a second curved surface, coupled to the first surface shaped for directing the light in an optical illumination system directly to target surface (110) using refraction (col. 11, lines 10-31).

Adan does not disclose the first direction (angle) is different from the second direction (angle).

Bohn teaches the first direction (angle) is different from the second direction (angle) (See Fig.13, items 826, 826', Col. 12, Lines 18-41).

It would be obvious to a person of ordinary skill in the art at the time the invention was made to incorporate teaching of Bohn into Adan system in order to collect light and increase uniformity of illumination (See Col. 2, Lines 38-41 in the Bohn reference).

As to claim 33, as can be seen in figures 15-16, Adan shows the coupler (107) having aspherical shape.

As to claim 34, the shape of the coupler (107) in figures 5-6 is a toroidal shape.

As to claim 35, Adan (figure 6) teaches a light source (104) for illuminating the first and second surface of the coupler (107).

As to claims 36-37, Adan teaches using the device in an optical mouse or trackball (col. 4, lines 14-22).

As to claims 45 and 48, as can be seen below, Adan teaches all the limitations of claims 45 and 48 except the citation of having the first and the second reflective surfaces have a metal coating.

However, as can be seen in figure 5, Adan shows the light from the LED 104 reflected from the surface (107), which indicates a surface with a high reflectivity (i.e., metal surface).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to made the reflective surface of metal so as to provide high reflecting ratio with high reliability.

As to independent claim 40, Adan (figures 5-6) teaches an illumination system

Art Unit: 2673

In an optical pointing device (optical mouse 42), that includes an internal reflection (optical coupler 107) has an entrance surface (inlet end 142) positioned to gather light from the light source (104) in a first angle, a truncated light pipe (the pipe of the coupler 107) coupled to the entrance surface for directing the light, and a curved (outlet end 144) coupled to the light pipe for efficiently directing the light onto a surface (106) in a second angle (col. 11, lines 10-47).

Adan does not disclose the first direction (angle) is different from the second direction (angle).

Bohn teaches the first direction (angle) is different from the second direction (angle) (See Fig.13, items 826, 826', Col. 12, Lines 18-41).

It would be obvious to a person of ordinary skill in the art at the time the invention was made to incorporate teaching of Bohn into Adan system in order to collect light and increase uniformity of illumination (See Col. 2, Lines 38-41 in the Bohn reference).

As to claim 41, as can be seen in figure 5., the light pipe (the pipe of the optical coupler 107) is cone-shaped.

As to claim 42, as can be seen in figure 5, Adan shows that the light pipe (107) has a larger entrance (142) cross-section than exit cross-section (144).

As to claim 43, the shape in figure 5 of the optical pipe (107) can be considered as a cylindrical shape.

As to claim 47, using the broadest reasonable interpretation of the claim; we can consider that each side of the pipe is first and second reflective surface.

As to claim 51 , Adan shows a light source (LED 104).

As to independent claim 57, Adan (figure 6) teaches a system for illuminating a target surface (optical mouse 42) that includes a light source (LED 104), positioned at angle relative to a circuit board (158), the light source emitting light through an opening (206), and a lens (155) having an entrance surface and an exit surface, wherein the entrance surface positioned to gather the light from the light source and the exit surface directing the light onto the target surface (col. 12, lines 16-34). Adan also shows in figures 15-18, that the shape of the lens (155) has an aspherical in the entrance surface, and the exit surface (the middle part of the lens 155) is fairly cylindrical. Note that with respect to claim 57, the claim still broad enough to be read to consider the lens to as element (155) in Adan's device. However, by considering the amendment and the remarks of the applicant's the claim can be also rejected similarly to consider the coupler (107) as the acted lens.

Adan does not disclose the first direction (angle) is different from the second direction (angle).

Bohn teaches the first direction (angle) is different from the second direction (angle) (See Fig.13, items 826, 826', Col. 12, Lines 18-41).

It would be obvious to a person of ordinary skill in the art at the time the invention was made to incorporate teaching of Bohn into Adan system in order to collect light and increase uniformity of illumination (See Col. 2, Lines 38-41 in the Bohn reference).

As to claim 58, as can be seen in figure 6, Adan shows that the surface (106)

and the circuit board (158) are parallel.

2. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adan in view of Smith (US patent NO. 6,476,970).

As to claim 3, as can be seen above, Adan teaches all the limitations of claim 3 except the citation of using a Fresnel lens.

However, Smith teaches illumination optics for an optical mouse that includes a Fresnel lens (figure 6). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Smith using Fresnel lens to be incorporated to Adan's device so as to be able to provide a compact uniform illumination beam that does not have blind spot.

As to claim 8, the shapes of the lens provided by Smith in figures 8-9 are fairly read on the limitation wedge shape of claim 8. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Smith using wedge lens to be incorporated to Adan's device so as to be able to provide a compact uniform illumination beam that does not have blind spot.

3. Claims 16-17, 38-39 and 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adan in view of Bidiville (US patent NO. 6,084,574).

As can be seen above, Adan teaches all the limitations of claims 16-17, 38-39 and 52-53 except the citation of having the lens made from glass or optical plastic.

However, Bidiville (figure 12B) teaches an optical mouse that includes lens (1220), which is made from glass or optical plastic (col. 16, lines 34-43).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Bidiville having lens made from glass or optical plastic to be incorporated to Adan's device because such materials are known to be used in the manufacturing of lenses and known for its reliability and affordability.

Response to Arguments

4. Applicant's arguments with respect to claim 1-17,25-43,45,47-48,51-53,57-58 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

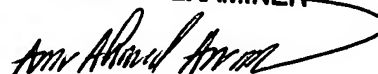
Art Unit: 2673

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LS

11.02.05

AMR A. AWAD
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read "Amr A. Awad", with a long, sweeping horizontal line extending to the right.